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Reducing psychopathic violence: A review of the treatment literature[☆]

Dennis E. Reidy^{*}, Megan C. Kearns, and Sarah DeGue

Centers for Disease Control & Prevention, Division of Violence Prevention, United States

Abstract

Psychopathy reflects a pathological form of personality that predisposes individuals to risk for perpetration of chronic and severe violence across their lifespan. The violence attributable to psychopathic persons constitutes a substantial portion of the societal burden to the public health and criminal justice systems and thus necessitates significant attention by prevention experts. However, there is a relatively nascent literature that has examined psychopathic persons' response to treatment, especially considering violence as an outcome. Nevertheless, there have been repeated averments about the amenability (or lack thereof) of psychopathy to treatment. In the present paper, we attempt to provide a comprehensive review of studies assessing the relation of psychopathy to violence outcomes following intervention. Our review of studies suggests there is reason to suspect that specific and tailored interventions which take into consideration psychopathic persons' unique patterns of behavioral conditioning and predispositions may have the potential to reduce violence. However, equally important, certain interventions may potentially exacerbate these persons' violent behavior. The nature of the outcomes is likely highly dependent on the specific components of the intervention itself. We conclude that future research should increase methodological rigor by striving to include treatment control groups and increasing the transparency of the implemented interventions.

Keywords

Psychopathy; Violence; Aggression; Recidivism; Treatment

1. Introduction

Violence is a ubiquitous social problem spanning communities, countries, and continents. According to the World Health Organization's *World Report on Violence and Health*, violence is among the leading causes of death for people aged 15–44 (Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002). However, mortality rates capture only a fraction of those afflicted by violence, as they do not include the profusion of nonfatal acts of physical assault, sexual violence, child maltreatment, and psychological abuse. In 2011 alone, the FBI estimated that 1.2 million violent crimes occurred in the United States (Department of

[☆]The findings and conclusions in this review are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

^{*}Corresponding author. Tel.: +1 770 488 0525. dreidy@cdc.gov (D.E. Reidy).

Justice, 2012). The consequences of violent victimization go well beyond the initial direct physical injury and include a wide range of physical and psychological health problems. Victims of violence often suffer long-term adverse sequelae including mental health disorders, difficulty with interpersonal relationships, and potential social isolation; as well as economic consequences from health care costs and lost wages due to missed work (Dahlberg, 2007; Krug et al., 2002). It is evident that violence poses a significant economic burden to society with an estimated single year cost of \$70 billion for lost productivity and medical expenses resulting from violence-related injuries and deaths (Corso, Mercy, Simon, Finkelstein, & Miller, 2007).¹ These findings buttress the World Health Organization's designation of violence as a major public health issue (Krug et al., 2002).

Given the considerable health and economic impacts of violence, it is important that violence reduction efforts take a directed approach by devising strategies and interventions that will prove most fruitful at the individual, community, and societal level. To be most effective in reducing violence at the population level we must examine those factors with the greatest contribution to the development and maintenance of violence in our communities. A particularly pertinent risk factor, psychopathic personality (psychopathy), appears to be one of the strongest dispositional predictors of aggression and violence (Dolan & Doyle, 2000; Neumann & Hare, 2008; Leistico, Salekin, DeCoster, & Rogers, 2008; Monahan et al., 2001), and is thought to be related to the most violent and pathological forms of aggression (Reidy, Shelley-Tremblay, & Lilienfeld, 2011) including those deemed “gratuitous and sadistic” (Porter, Woodworth, Earle, Drugge, & Boer, 2003). Theorists hypothesize that deficient emotion processing, a process pivotal during early development, is the core deficit of psychopathy and that it disrupts normal socialization (Blair, 2003; Blair, Colledge, Murray, & Mitchell, 2001; Herba et al., 2007). The deficit appears to be associated with aberrant amygdala function which impairs the ability to experience and recognize emotions of distress in others (e.g., sadness or fear) consequently impeding the development of empathy. This, in turn, is thought to engender a predisposition for severely violent and antisocial behavior (Blair, 2005).

The link between psychopathy and aggression has been empirically substantiated in diverse populations including forensic, community, psychiatric, and adolescent (DeMatteo, Heilbrun, & Marczyk, 2006; Harris, Rice, & Quinsey, 1993; Hart, Hare, & Forth, 1994; Porter et al., 2003). Additionally, laboratory-based research utilizing college and community samples has repeatedly confirmed that psychopathy is a risk factor for aggression and violence (e.g., Lotze, Veit, Anders, & Birbaumer, 2007; Reidy, Zeichner, & Seibert, 2011). The consequences of psychopathic violence reflect a significant cost to society reaching far beyond the individual victims of each violent act. For example, although psychopaths represent less than 1% of the general population and approximately 20% of prison populations (Blair, Mitchell, & Blair, 2005), they perpetrate twice as many violent crimes (Hare & Jutai, 1983; Porter, Birt, & Boer, 2001), and as much as 30–50% of all violent crimes (Hare, 1993, 1996, 1999; Hare & McPherson, 1984), and are estimated to cost the criminal justice system \$250–460 billion annually (Anderson, 1999; Kiehl & Hoffman,

¹Estimates were calculated in U.S. dollars for the year 2000.

2011). According to the Federal Bureau of Investigation (1992), nearly half of all law enforcement officers killed in the line of duty were killed by perpetrators matching the personality profile of a psychopath. Moreover, psychopathic offenders have a high risk for recidivism (Hemphill, Hare, & Wong, 1998; Olver & Wong, 2006; Salekin, 2008) and are five times more likely than nonpsychopathic offenders to recidivate violently (Serin & Amos, 1995). Clearly, psychopathic individuals contribute a significant proportion of the burden that violence imposes on the public.

Despite at least 70 years of literature on psychopathy (e.g., Cleckley, 1941), we have garnered little knowledge about how to intervene for psychopathic violence. There is debate among experts about the efficacy of extant treatments for psychopathy with the few existing reviews offering rather discrepant interpretations that range from optimistic (Salekin, 2002; Salekin, Worley, & Grimes, 2010) to pessimistic (Harris & Rice, 2006). Yet, there is actually little research which directly and adequately addresses this issue (Salekin et al., 2010; Skeem, Polaschek, Patrick, & Lilienfeld, 2011). Moreover, previous examinations have conflated constructs by aggregating divergent measures and constructs of psychopathy (e.g., psychopathy, antisocial personality, conduct disorder), treatment outcomes (e.g., substance abuse, therapist impressions of change, recidivism, violence), and the types and degree of intervention (e.g., pharmacotherapy, psychodrama, social skills training, career counseling, substance abuse treatment), all of which has potentially muddled the waters and obscured knowledge of psychopaths' response to treatment. Thus, in spite of the handful of existing reviews, we believe it is important to undertake a thorough examination of the literature within a more focused set of confines to resolve these aforementioned ambiguities. Specifically, whereas previous reviews have been overly broad by aggregating measures of treatment outcomes (e.g., D'Silva, Duggan, & McCarthy, 2004; Salekin, 2002; Salekin et al., 2010), we restrict our review of psychopathy and treatment to studies focusing on violence as an outcome. Additionally, the studies we review all employ a similar and current conceptualization of psychopathy using the assessment method developed by Hare (1991, 2003: see "Conceptual Definition and Measurement of Psychopathy" section below), as this conceptual model has been the most widely researched thus far with the best validated measures, particularly in relation to violence prediction (Kiehl, 2006; Reidy, Shelley-Tremblay, et al., 2011; Skeem & Cooke, 2010a). Two recent reviews have focused solely on sex offenders (Abracen, Looman, Ferguson, Harkins, & Mailoux, 2011; Doren & Yates, 2008); however, we attempt to include all studies, organized by populations (i.e., sex offenders, psychiatric, adolescents, forensic), of psychopathy (as measured by the Psychopathy Checklist or one of its derivatives: see below) and treatment for violence outcomes. Additionally, we attempt to provide more background and examination of the therapies employed in each of the studies and their potential relation to those processes that beget violence (e.g., Anderson & Bushman, 2002). In doing so, we hope to identify potential patterns that may exist within or across populations, as well as specific components of interventions that may prove most effective in ameliorating violence perpetrated by this class of individuals. Where appropriate, we address methodological shortcomings; however, these limitations have been previously documented (e.g., D'Silva et al., 2004) and it is not our intention to merely reiterate the points that have been noted by others. Finally, we propose

ideas for future research and considerations for the development of interventions focused on reducing the sequelae of psychopathy.

2. The question(s) at hand

Much as the constructs in this domain of research have been conflated, so too may the questions that are asked and answered be conflated. It is, in fact, not a simple singular question of whether or not treatment reduces psychopathic violence, but rather a series of related questions which may be answered through a series of methodologies. For example, we may want to answer the questions, “Does treatment make psychopaths more violent?”, or “Does treatment have no effect on psychopaths' violence?” Alternatively, and perhaps most obviously, the question we may want to answer is “Does treatment make psychopaths less violent?” However, we must be careful not to confuse this question with the question “Does psychopathy moderate the effects of treatment on violence?” For example, it is quite possible that psychopathic violence is not wholly immutable but does present a more resistant form of pathological behavior. This would suggest that violence reduction efforts would be dose dependent and that psychopaths, while more resistant to treatment, are still amenable to intervention if they receive sufficient dosages. Thus, changes in violence outcomes would be relative to the dosage of treatment they received. Arguably, each question is important in that determination of resources and development of interventions are dependent on the answer to each of these questions. It is, however, important that we understand which question we are answering with the methodology employed. Our goal is to provide a review of studies assessing any and all relation of psychopathy to violence outcomes following intervention. In the present review, we have attempted to examine all extant studies of psychopathy and violence outcomes post-treatment, within our specified parameters, regardless of the methodological design. We do, however, examine these studies giving consideration to those questions which can be answered as allowed by their design. See Table 1 for summary details of treatment outcome studies.

3. Conceptual definition & measurement of psychopathy

In clinical and forensic populations, the Psychopathy Checklist (PCL; Hare, 1980) and its progeny, the Psychopathy Checklist-Revised (PCL-R; Hare, 2003) the Psychopathy Checklist: Screening Version (PCL-SV; Hart, Cox, & Hare, 1995), the Psychopathy Checklist: Youth Version (PCL-YV; Forth, Kosson, & Hare, 2003), and the Antisocial Process Screening Device (APSD; Frick & Hare, 2001) are the most widely used and validated measures of psychopathy (Kiehl, 2006; Skeem & Cooke, 2010a, 2010b). Although cut scores on the PCL measures have commonly been employed to categorize individuals dichotomously as psychopaths or nonpsychopaths,² a substantial literature has validated the dimensional nature of the construct (e.g., Edens, Marcus, Lilienfeld, & Poythress, 2006; Guay, Ruscio, Knight, & Hare, 2007; Murrie et al., 2007).³ Hare's original conceptualization of psychopathy identified two moderately correlated factors (Hare, 1991; Harpur, Hakstian,

²When assessing child and adolescent populations it is not common practice to label individuals as psychopathic.

³Despite the growing recognition of the dimensional nature of the psychopathy construct, much research has been conducted using cut scores on the total scale score of the PCL measures to categorize individuals dichotomously as psychopaths or nonpsychopaths. As such, the term psychopath is commonly interpreted to mean individuals scoring at or above 30 (sometimes 25) on the PCL-R.

& Hare, 1988). Factor 1, *Emotional Detachment*, includes emotional and interpersonal features, such as affective shallowness, absence of empathy, lack of remorse, lack of shame, superficial charm, manipulative style, grandiosity, and lying. Factor 2, *Social Deviance*, encompasses impulsivity, aggression, substance abuse, high sensation seeking, low socialization, proneness to boredom, irresponsibility, lack of concern or plans for the future, low motivation, and early life behavioral problems and delinquency (Hare, 1991, 2003). Debate about the factor structure of the PCL measures has stimulated new models of the factor structure including a three-factor model tapped by only 13 of the original 20 PCL-R items (Cooke & Michie, 2001) and a four-facet model in which each of the original two factors comprise two subfacets (Hare, 2003). The three factors, *Arrogant Deceitful Interpersonal Style*, *Deficient Affective Experience*, and *Impulsive Irresponsible Behavioral Style* are similar to those in the two-factor and four-facet models in that they are hierarchical in nature, in that all factors underpin a superordinate psychopathy construct. Hare's four-facet model split Factor 1 into the *Interpersonal* and *Affective* facets, while Factor 2 is split into the *Lifestyle* and *Antisocial* facets. Each of these models is highly similar in that they include emotion deficit, personality, and behavioral components (assessed by nearly the same items). They differ mostly in that the three-factor model excludes criminal behavior as a central component of the construct (for a detailed discussion see Hare & Neumann, 2010; Skeem & Cooke, 2010a, 2010b). Despite the emergence of new structural models, the two-factor structure has been the most widely researched and validated conceptual model of psychopathy thus far.

4. Review of studies

4.1. General adult forensic populations

As one might expect, most of the research conducted with violent psychopathic individuals has focused on forensic populations. However, relatively few treatment studies have been conducted and we found only two studies with general forensic populations that have looked specifically at violence outcomes.⁴ In one of the only studies to examine psychopathy and treatment response among incarcerated women, Richards, Casey, and Lucente (2003) compared three treatment conditions aimed at reducing substance abuse/addiction in a sample of 404 female maximum security prisoners. Women were assigned to a modified therapeutic community, a Heuristic System (Richards, 1999) treatment with dedicated housing (i.e., participants are housed with other prisoners in the treatment program), or Heuristic System treatment without dedicated housing (i.e., participants are housed in general population). In the therapeutic community, treatment focused on skill building and “empowering” the participants to accept responsibility for their actions. It is primarily cognitive-behavioral in orientation (Richards et al., 2003). The Heuristic System provides a structured method for developing case formulations that places treatment targets in the

However, for the sake of brevity and in recognition of the dimensional nature, we use the terms psychopath and nonpsychopath to refer to those individuals scoring at the higher or lower ends of the spectrum respectively, and not to suggest reference to any cut score or dichotomous classification.

⁴Although we do not review it here, we did identify an additional study by Rock, Sellbom, Ben-Porath, and Salekin (2013) who examined 483 convicted male batterers and found that psychopathy predicted treatment failure and recidivism related to domestic violence. However, unlike other research studies included in this review, this sample did not utilize one of the PCL measures and instead used the MMPI-2RF to estimate psychopathy scores on the Psychopathic Personality Inventory.

context of an integrative paradigm of personality and addiction, from which optimal treatment strategies for the individual are chosen. Input from the patient is elicited and incorporated into the treatment plan as part of the process. Thus, assessment and treatment are both comprehensive and individually tailored to each participant (Richards, 1999). Across all treatment conditions, psychopathy scores were significantly associated with poor treatment response, and upon release, fewer days in the community prior to receiving a new criminal charge. Factor 1 scores in particular were associated with increased risk for recidivism. However, Richards et al.'s measure of recidivism did not distinguish violent from nonviolent offenses so it is unclear whether psychopathy predicted violent recidivism in this sample. Looking specifically at violent infractions during incarceration, the authors reported that total and Factor 2 psychopathy scores correlated⁵ with violence during the treatment program, but at the post-treatment follow-up (conducted while the women were still incarcerated) all psychopathy indices were nonsignificant. Thus, Richards et al.'s findings suggest that psychopathy was associated with poorer treatment response, greater general recidivism risk upon release, and violence during the treatment, but was not associated with violence rates post-treatment.

Notably, the authors acknowledge a 40% attrition rate in the sample at post-treatment follow-up because many participants were released directly from treatment into the community rather than returning to general incarceration. They acknowledge that this subsequent loss of degrees of freedom could explain the lack of correlation between psychopathy and violence outcomes at treatment completion. Indeed, a seemingly paradoxical outcome for incarcerated offenders indicates highly psychopathic individuals are more likely to receive earlier conditional release from incarceration despite having a greater history of violence and greater likelihood of recidivating (Porter, ten Brinke, & Wilson, 2009). Porter and colleagues suggest that this may be because their cunning and manipulative interpersonal style makes them adept at deceiving parole boards, counselors, or other institutional authorities. This would thus create a selective attrition in which the offenders at greatest risk for violence, those most psychopathic, would be most likely to be lost from the sample. Moreover, women scoring 30 or higher on the PCL measures were excluded from this study, further increasing this sampling bias as these women would have the greatest risk for violence.

More recently, Olver, Lewis, and Wong (2013) examined a general population of incarcerated violent offenders participating in the Aggressive Behavior Control treatment program: a 6 to 8 month program that emphasized social learning principles and a cognitive-behavioral treatment model. The content and pacing of treatment is adapted to each individual participant based on various factors (e.g., cognitive ability, motivation, cultural background), and the program aims to reduce violent behavior by breaking behavioral patterns associated with aggression and increasing prosocial skills. In addition to measuring violent recidivism in the community or while incarcerated, the authors used the Violence Risk Scale (VRS: Lewis, Olver, & Wong, 2013; Wong & Gordon, 2006) to measure “therapeutic change” specific to violence risk. The VRS draws on a modified version of

⁵The authors reported partial correlations between psychopathy indices and violence controlling for days at risk, aggregated across the three treatment conditions.

Prochaska, DiClemente, and Norcross (1992) transtheoretical model that indicates people progressively cycle through five stages of change (Precontemplation, Contemplation, Preparation, Action, and Maintenance). Each dynamic item identified as a violence-specific treatment target on the VRS was rated pre- and post-treatment to assess the individual's stage of change in relation to risk for future violence. When controlling for psychopathy, therapeutic change as reflected by reductions in scores on the VRS predicted decreased probability of violent recidivism. Results indicated that higher levels of psychopathy were associated with less therapeutic change (i.e., less reduction in risk for violence) and higher rates of violent recidivism. In particular, the authors reported that positive therapeutic change was uniquely negatively correlated with the Factor 1/Affective facet of the PCL-R

4.2. Adult psychiatric populations

There has also been interest in establishing the relationship of psychopathy to treatment outcome in civil psychiatric settings. Skeem, Monahan, and Mulvey (2002) assessed patients diagnosed with a major mental health diagnosis and compared those who were receiving minimal outpatient treatment (0–6 sessions) to those receiving “intensive” outpatient treatment (7 or more sessions) every 10 weeks for one year. The authors dichotomized this measure of treatment involvement based on the results of Monahan et al. (2001) who reported that in this sample, dichotomization at 7 sessions at time one was maximally predictive of violence at time 2. Additionally, the authors used propensity score matching to control for nonrandom assignment to condition (see Luellen, Shadish, & Clark, 2005). Measures of treatment involvement and violence were based on patient self-reports. When available, collateral reports and official records were used to determine rates of violence. The majority of patients received a combination of verbal therapy and medication (37%) or verbal therapy only (40%), and less common was medication only (10%), group therapy only (5%), drug and alcohol treatment (5%), or some “other” form of treatment (3%). No other details on the modality or content of treatment were reported. The authors report that in the high psychopathy group, those individuals receiving 7 or more sessions were significantly (one-tailed) less violent than those receiving 0–6 sessions (6% vs. 23%) at the initial follow-up. However, there were no significant differences between treatment groups at any of the additional follow-up periods.

Harris and Rice (2006) have challenged these results and suggested Skeem and colleagues' data demonstrate a selection bias in which the lowest risk individuals are more likely to receive treatment. Specifically, they argue that because the authors did not stratify the data when adjusting for nonrandom assignment via propensity score analysis, patients of lower risk were more likely to receive treatment. In a related vein, approximately 40% of the sample was lost due to hospitalization or incarceration and were therefore not represented in the follow-up assessments. It is possible that the individuals lost to follow-up, especially those who were incarcerated, were at greater risk for violence than those who remained in the study. Inspection of comparison groups indicates that the high treatment group had significant attrition across follow-ups whereas the low treatment group apparently had no decline in numbers. In addition, although the authors measured treatment dosage in reference to number of sessions, the dosage effect of pharmacotherapy was not assessed. The differential outcomes for violence are feasibly attributable to different dosages or classes of

medications patients received independent of participation in talk therapies. Certain mood stabilizers have been shown to be effective in reducing aggressive behavior (e.g., Jones et al., 2011), and a common side effect of antipsychotics is sedation and lethargy which would preclude many instances of arousal and associated violence. While these potential confounds would not challenge the validity of the violence outcomes, it would call into question the stability of these reductions in violence: without the therapeutic medications psychopathic persons may revert to their violent inclinations. Congruently, we see from the data presented that the differences in violence between groups do, in fact, dissipate over time.

In contrast to the community psychiatric sample studied by Skeem et al. (2002), Chakhssi, de Ruiter, and Bernstein (2010) examined a group of hospitalized forensic psychiatric patients who had been convicted for serious violence. Over a period of 20 months, all patients were assessed four times while receiving some combination of creative arts therapy, group-based social skills training, aggression replacement training, individual therapy, and work and educational programming. In addition, 13.5% of patients received psychotropic medications. All patients were assessed at onset of treatment and every six months thereafter by psychiatric nurses. Both psychopathic and non-psychopathic patients demonstrated commensurate therapeutic improvements in adaptive social behavior, communication skills, insight, attribution of responsibility, and self-regulation strategies across the repeated follow-ups. However, psychopathic patients showed significantly more physical violence at 18 months post baseline than nonpsychopathic patients ($d = 1.06$). Moreover, there was a significant interaction between group and time indicating the change in slope over the four time points was in opposite directions for the two groups. The simple slopes were not significant, but scrutiny of the means indicated improvement in physical violence scores for the nonpsychopathic patients and a slight deterioration for psychopathic patients. Calculating a reliable change index (RCI; Jacobson & Truax, 1991), the authors reported that the negative slope in the psychopathic group was due to a subset of psychopathic patients, approximately 25%, that demonstrated reliable deterioration in regards to violent behavior. Seventy percent of psychopaths did not demonstrate reliable change in either direction (i.e., they neither improved nor deteriorated in regard to violence).

In one of the earlier and more controversial treatments for violent criminal offenders, Rice, Harris, and Cormier (1992) assessed the effects of a prison therapeutic community on violent recidivism. One hundred seventy-six “mentally disordered” participants who had spent over two years in a therapeutic community were matched with controls from those participants who had been assessed at the forensic unit but had not been treated. Participants were matched on variables including age, criminal history, and index criminal offense as well as temporal proximity of the index offenses. Despite relatively meticulous attempts to match groups, there were a number of significant differences between groups including more diagnoses of schizophrenia, sexual motives for their index offense, and involvement of alcohol during index offense for the treated group. Both groups were followed for an average of 10 years after discharge by investigators who were blind to the index characteristics of the participants, including their psychopathy scores. Participants in the study were treated between the years of 1968 and 1978 (prior to development of the PCL and PCL-R); thus PCL-R scores were derived from retrospective file reviews. This program had unique elements, such as peer-led operation (with minimal contact with professional staff), intensive

group therapy (i.e., up to 80 hours weekly), and an absence of programs specifically aimed at modifying criminal attitudes and behavior. However, the program did use techniques that would likely be considered inappropriate by today's treatment standards, including nude encounter groups and in some cases, administration of LSD and other drugs (Harris, Rice, & Cormier, 1994). Rice et al. (1992) reported the violent recidivism rate for nonpsychopaths was significantly lower if they were treated than if they were not treated (22% vs. 45%, respectively). However, the opposite trend was seen for psychopaths: the violent recidivism rate for treated psychopaths was significantly higher than for untreated psychopaths (77% vs. 55%, respectively). The findings of this study have been often cited as evidence to aver that treatment of psychopathy has iatrogenic effects.

4.3. Adult sex offender populations

Much of the research on psychopathy treatment has been conducted specifically with sex offender populations. For example, Olver and Wong (2006, 2009)⁶ studied the effect of an individualized, high-intensity treatment with incarcerated sex offenders that utilizes a cognitive-behavioral orientation, emphasizes relapse prevention, and is tailored to each offender's specific problem domains, risk profile, and other characteristics that may impact treatment response (e.g., motivation, cultural background, cognitive capacity). The program is typically 6 to 8 months in length and delivered by a multidisciplinary team, with evidence supporting the efficacy of the program at reducing sexual recidivism among the general population of treated sex offenders (Olver, Wong, & Nicholaichuk, 2009). Despite the general efficacy of this program, Olver and Wong (2009) found that when specifically looking at the role of psychopathy, psychopathic offenders were more likely than their non-psychopathic counterparts to discontinue treatment (although 75% of psychopaths completed treatment), and failure to complete treatment was associated with a higher likelihood of violent recidivism, but not sexual recidivism. Treated psychopaths clearly showed higher serious recidivism (i.e., sexual and nonsexual violence) than did treated nonpsychopaths. Treated psychopaths also showed higher rates of sexual rearrests than treated nonpsychopaths and psychopathy scores predicted faster failure rates for sexual reconviction (Olver & Wong, 2006). As with Olver et al. (2013), Olver and Wong (2009) used the VRS to measure "therapeutic change" specific to violence risk. Among those participants who demonstrated positive therapeutic change (i.e., declines in risk for violence), reductions in both sexual and violent recidivism were noted only when controlling for psychopathy.

Similarly, Looman, Abracen, Serin, and Marquis (2005) examined a group of sex offenders treated as part of a 7-month residential treatment that also relies on a cognitive-behavioral approach and emphasizes skill development and relapse prevention. Treatment participants were followed for an average of five years. Results indicated that high psychopathy offenders violently and sexually recidivated at significantly higher and faster rates than low psychopathy offenders, even when receiving therapist ratings of good therapeutic progress. In another study utilizing a cognitive-behavioral treatment model, Hildebrand, de Ruiter, and de Vogel (2004) retrospectively scored the PCL-R for 94 forensic psychiatric sex offenders

⁶These two studies report on the same sample of 156 sex offenders.

based solely on “extensive” file information. Patients were followed for an average of 11.8 years and recidivism data included sexual offenses, nonsexual violent offenses, total violent offenses (including sexual and non-sexual crimes), and general non-violent offenses (e.g., property or drug offenses). For all types of recidivism, the psychopathic offenders were reconvicted significantly more often and at faster rates than offenders lower in psychopathy.

Multiple studies have also examined an overlapping set of forensic sex offenders samples treated at a medium-security federal penitentiary in Canada. Seto and Barbaree (1999) first reported on this treatment program, which they described as based on a relapse prevention model that incorporates daily group therapy sessions and, in some cases, behavioral conditioning to reduce deviant sexual arousal. Focus is placed on acceptance of responsibility, victim empathy, and understanding of the thoughts, feelings, and behaviors that precipitate a sexual offense. Counter to predictions, initial outcomes reported from this sample indicated that better treatment behavior (i.e., therapist ratings of session conduct, motivation, attendance/participation, ratings of therapeutic change, etc.) was associated with higher recidivism rates. In particular, high psychopathy men that evinced better treatment behavior were approximately five times more likely to commit a serious re-offense (i.e., sexual and nonsexual violence). Barbaree (2005) examined this same sample over a longer follow-up period (average of 5.2 years) and found that while higher levels of psychopathy continued to be associated with reoffending, treatment behavior was no longer significantly related to recidivism. Utilizing a population that overlapped with the two previous studies, but increasing the sample size to 476 treated male sex offenders, Langton, Barbaree, Harkins, and Peacock (2006) followed their extended sample for an average of six years. In line with previous research (e.g., Olver & Wong, 2009), treatment noncompleters scored higher on psychopathy. Hazard ratios indicated that high psychopathy individuals were twice as likely as low psychopathy individuals to commit serious recidivism (i.e., aggregated violent or sexual reoffending) and survival analyses indicated that high psychopathy men were likely to do so at faster rates.

Finally, in one of the few studies on psychopathy treatment to include a comparison group, Abracen et al. (2011) utilized a matched sample of 55 untreated sex offenders with 64 offenders being treated at a treatment center in Ontario. Similar to other programs, this treatment utilizes a cognitive-behavioral relapse prevention model and involves individual and group-based treatment in an inpatient setting. The focus is placed not only on decreasing risk factors for recidivism, but also increasing participants' strengths. Abracen et al. (2011) found no difference between treated and untreated psychopathic sex offenders in reference to new violent convictions and new sexual convictions or rates of failure. However, there were no differences between the treated and untreated group for violent sexual reconvictions regardless of psychopathy. This seems to suggest either a lack of efficacy for this treatment program, or alternatively, this population may not have been representative of typical sex offender populations as recidivism rates were much lower in this sample than average rates of sexual recidivism (Hanson, Morton, & Harris, 2003). The authors do not report on differences in recidivism between high and low psychopathy offenders so we cannot examine whether psychopathy predicted recidivism in this sample.

4.4. Adolescent populations

Gretton, McBride, Hare, O'Shaughnessy, and Kumka (2001) examined charges and conviction rates for 220 adolescent sex offenders mandated to an outpatient treatment program. The follow-up period ranged from 7 to 106 months with an average follow-up period of 55 months. High psychopathy adolescents were at higher risk for both violent and sexually violent recidivism (as well as nonviolent offenses) than low psychopathy adolescents. Moreover, adolescents high in psychopathy traits reoffended more rapidly with both general violence and sexual violence. Unfortunately, no description of the treatment program was provided, and no discussion of treatment behavior or response was included in the analysis on recidivism risk.

Spain, Douglas, Poythress, and Epstein (2004) reported on a sample of male adolescent offenders recruited from a residential treatment facility. In this study, data from 42 adolescents in a sex offender program were aggregated with data from 43 adolescents living in halfway house for nonsexual offenses. According to the authors, the average length of stay lasted approximately 9 to 12 months and the program was based on a rational emotive behavioral treatment (REBT) philosophy, involving multiple modes of treatment (e.g., family therapy, day treatment, career counseling). The program requires participants to earn points in order to advance through and complete the multi-step program. However, the two populations came from separate residential treatment programs and would seemingly be expected to receive significantly different interventions based on the type of offenses (i.e., sex offenders vs. non-sex offenders). It is unclear to which treatment program the authors are referring in their description, or if both populations received the same intervention. Employing three separate measures of psychopathy traits, they reported a positive association of psychopathy to incidents of physical aggression and administrative infractions while enrolled in the treatment program. The authors did not assess whether the relationship between psychopathy and violence differed between the two samples included in the study.⁷ Psychopathy traits also predicted longer time to completion of the treatment program. However, there were no data post-treatment to determine if the relationship between psychopathy and violence persisted.

Like most of the research with adult psychopaths, these two aforementioned adolescent studies did not employ a no treatment or a treatment as usual comparison group. This of course limits our ability to directly answer the question "Does treatment reduce psychopathic violence?" However, there is some evidence to suggest that certain intensive intervention with adjudicated violent youths may be able to reduce violence institutionally and in the community. Caldwell, Skeem, Salekin, and Van Rybroek (2006) reported on the Mendota Juvenile Treatment Center (MJTC) which was developed for treatment of the most violent and behaviorally disruptive incarcerated adolescent males. The main philosophical principles of this program are the reduction of sanctions for negative behavior and the implementation of a type of token economy. In other treatment models, the use of punitive sanctions for violent and disruptive behavior often results in expulsion or temporary removal

⁷We attempted to contact authors regarding these questions but did not receive response to our correspondence in time for this publication.

from treatment programs, which often paradoxically reinforces the undesired behavior. At the MJTC, when increased security measures are required, a concomitant increase in individualized treatment contact occurs precluding negative reinforcement of disruptive behavior. The MJTC appears to shift reinforcement from negative behavior to the desired prosocial behaviors (see Caldwell & Van Rybroek, 2005). Using propensity score analysis to control for nonrandom assignment, Caldwell, Skeem, et al. (2006), compared the MJTC to a “treatment as usual” comparison group. Results indicated that compared to a group of high psychopathy adolescents from traditional correctional institutions, high psychopathy youths incarcerated and treated at the MJTC were significantly less likely to violently recidivate at two year follow-up. These findings were replicated again using a treatment as usual control comparison group with a larger sample and follow-up period ranging from 24 to 79 months (Caldwell, 2011). Additionally, Caldwell, McCormick, Umstead, and Van Rybroek (2007) found that among adolescent offenders treated at the MJTC, no relation between psychopathy scores and violent or general recidivism existed at 4 year follow-up, despite psychopathy being associated with historical severity and onset of behavioral problems and to initial institutional misconduct. More recently, Caldwell, McCormick, Wolfe, and Umstead (2012) expanded on their previous results and found that treatment at the MJTC led specifically to reductions in psychopathy-related features such as callous/unemotional, narcissistic, and impulsive personality traits. In turn, these changes also predicted improved institutional behavior and treatment compliance. As a whole, data from Caldwell (2011), Caldwell, Skeem, et al. (2006), Caldwell et al. (2007, 2012) seem to suggest that the MJTC may reduce psychopathic violence by reducing psychopathic traits.

4.5. Summary of treatment studies

In summary, the findings from general forensic populations are limited and divergent. Of the two identified studies, Olver et al. (2013) reported that psychopathy predicted less improvement in violence risk scores on the VRS from pretreatment to post-treatment (i.e., their heightened risk for violence did not dissipate over the course of treatment). Further substantiating this finding, psychopathy predicted violent recidivism post-treatment in both the community and while still incarcerated. In contrast Richards et al. (2003) noted that the correlation between psychopathy indices and institutional violence that existed at pretreatment and during treatment had dissipated by post-treatment. However, there are several issues with selection bias that limit the ability to interpret these outcomes.

Three studies used forensic psychiatric populations; two of the three (Chakhssi et al., 2010; Rice et al., 1992) reported potential iatrogenic effects within the psychopathic groups. Notably, there were significant group differences at baseline in the Rice et al. study, which could have implications for differences in treatment outcomes. The third study (Skeem et al., 2002), reported a dose effect in which high psychopathy patients receiving 7 or more treatment sessions were less violent than those psychopathic patients receiving fewer sessions. However, these significant differences dissipated after the first follow-up period so that there were no differences between high and low treatment psychopathic groups at the remaining follow-up assessments. Additionally, there are significant limitations placed on interpretation due to selective attrition rates in this study.

The most extensively researched population was sex offenders and these studies proffered the most consistent pattern of findings (even when considering the two adolescent studies that included sex offenders): high psychopathy persons were repeatedly at continued risk for violent (sexual and nonsexual) recidivism and at rates faster than their low psychopathy counterparts. Nearly all of the studies in the sex offender populations looked at psychopathy simply as a moderator; only one of these studies (Abracen et al., 2011) included a no treatment control group permitting examination of the effectiveness of treatment itself for psychopaths. Although these authors reported no difference between treated and untreated psychopaths for violent recidivism, they also found no effect for the sex offender treatment program in general.

Finally, in adolescent populations there were five studies by three research groups. The two studies that included sex offenders as part of, or all of the sample (Gretton et al., 2001; Spain et al., 2004) reported positive correlations between psychopathy and violence during treatment and for violent recidivism. However, Caldwell, Skeem, et al. (2006), Caldwell et al. (2007), (Caldwell, 2011) designed a treatment specifically for highly violent adolescents and, using a treatment as usual comparison group with propensity score matching, demonstrated replicated reductions in psychopathic violence several years post-treatment.

5. Summary and conclusions

Despite strong speculations for and against the efficacy of treatment for psychopathic individuals, there is a relative dearth of research on this topic, particularly when addressing violence as an outcome. Setting aside the methodological limitations of extant research for a moment, the literature on treatment outcomes for psychopathic violence paints a potentially bleak picture in that there is a general lack of consensus. The most optimistic interpretation is that with intense and rigorous intervention, risk for violence can be reduced in psychopathic persons, but data supporting this supposition are seemingly the minority (Caldwell, 2011; Caldwell, Skeem, et al., 2006). Alternatively, the less encouraging interpretation is that treatment, or certain variants of treatment, are iatrogenic with at least a subset of adult psychopathic persons (Chakhssi et al., 2010; Rice et al., 1992). Skeem et al. (2011) suggest that “until proven otherwise (via RCTs or other rigorous quasi-experimental studies), the default assumption should be that individuals with psychopathy can be effectively treated” (p. 132). However, considering the potential for iatrogenesis with at least some psychopathic persons under certain treatment conditions, a more conservative/neutral assumption may be warranted when considering violence as an outcome until more methodologically rigorous investigations can identify specific treatment components that reliably lead to reductions in psychopathic violence. In the interim, there are several steps researchers can take to enhance our knowledge of treatment outcomes for psychopathic individuals and to form stronger conclusions about the efficacy of these treatments at reducing future violence.

Perhaps one of the most critical issues contributing to the lack of consensus on whether psychopaths can be effectively treated is that the studies that do exist are beset by methodological problems which temper interpretation (D'Silva et al., 2004; Doren & Yates, 2008). For example, only two published studies examining violence as a treatment outcome

(Abracen et al., 2011; Rice et al., 1992) employed a no treatment control group, and they were each marked by significant limitations: the therapeutic community described in Rice et al. (1992) utilized a number of seemingly inappropriate practices (Harris et al., 1994), and Abracen et al. (2011) reported no overall effects of the sex offender treatment program they evaluated, precluding the ability to make interpretations about psychopaths' amenability to the treatment. Additionally, one study examined effects of the dosage of treatment by comparing high and low treatment contact groups with results indicating lower rates of violence among psychopathic patients receiving greater doses of treatment (Skeem et al., 2002). However, the authors were not able to control for treatment modality or attrition of potentially high risk participants from the high dosage group due to hospitalization or incarceration. Two studies did utilize treatment as usual comparison groups (Caldwell, 2011; Caldwell, Skeem, et al., 2006) demonstrating consistent reductions in psychopathic violence. However, replication by independent research groups in different settings with separate clinicians is necessary (Chambless & Hollon, 1998). Nevertheless, it is worth noting that this is the only intervention showing reductions in psychopathic violence that has been replicated.

In addition to addressing methodological limitations and replicating research findings, it is also essential to be more explicit about the types of research questions being answered by studies with widely varying designs and methodological approaches. For example, a study design that utilizes a no treatment control group (e.g., Rice et al., 1992) or "treatment as usual" comparison group (e.g., Caldwell, Skeem, et al., 2006) can make more definitive statements about the effectiveness of the treatment for psychopathic individuals. In contrast, a study that compares treatment outcomes for individuals with high versus low psychopathy scores (e.g., Seto & Barbaree, 1999) are not able to draw conclusions about the overall effectiveness of the treatment at reducing violent recidivism, but are speaking more to the role of psychopathy as a predictor of treatment response. In fact, few of the studies we reviewed examined interventions designed for psychopathic persons but rather examined psychopathy as a moderator of response to treatment that might otherwise be efficacious (e.g., Olver & Wong, 2009; Richards et al., 2003). This is not to say that research of this nature does not offer important information about breaking the link between psychopathy and violence. Given the dearth of research available on treatment for psychopathy and impact on violence, valuable information can and must be gained from a variety of research methodologies. However, caution is necessary as the implications of these studies are directly tied to the design and analytic approach used to evaluate the treatment under question. Thus, our understanding of each treatment's relative effectiveness should be placed in this context.

Another relevant issue in evaluating treatments for psychopathy is to consider the sample receiving treatment and whether they are representative of all psychopathic individuals or could more accurately be described as a specific subtype with potentially unique treatment needs (e.g., sex offenders, adolescent, female). One generally consistent set of findings comes from studies conducted with sex offenders, which represent the majority of treatment studies conducted. These studies paint a fairly consistent picture for psychopaths with results suggesting that psychopathy predicts treatment dropout among sex offenders, and psychopathic individuals, especially those who drop out, are more likely to recidivate

violently with sexual and/or general violence, and at faster rates. This was also true for the adolescent studies that included sex offending youths (Gretton et al., 2001; Spain et al., 2004). This has been interpreted to mean that psychopathic persons can successfully be treated to reduce risk for violence if there are sufficient resources available to retain them in treatment. However, this interpretation is problematic because it may be that a creaming selection bias exists, wherein, the treatment completers generally have a better preexisting prognosis than noncompleters and comparison groups. Treatment outcome studies of sex offenders have shown that this selection bias occurs by attrition which, in turn, has led some to question the general efficacy of sex offender treatment programs (Larzelere, Kuhn, & Johnson, 2004). Thus, sex offenders may represent a distinctly violent population resistant to treatment independent of psychopathy. Alternatively, psychopathic sex offenders may represent a distinct type of violent psychopaths with a different prognosis. This would seemingly argue for the strong need to develop tailored treatments which may vary based upon being a generally violent or sexually violent psychopathic individual. Thus, it would be important to understand the context as well as typology of the violence perpetrated. Research indicates that interventions that are responsive to the criminogenic needs (i.e., constellation of risk and protective factors most salient for a given individual) are most effective in preventing violent and offending behavior (Andrews et al., 1990; Farrington, 2000; Gendreau & Goggin, 1996; Harkins & Beech, 2007); a similar method may prove most effective in stopping violent recidivism by psychopathic persons.

An additional potentially distinct type of psychopathic persons that requires further study is the female psychopath. Despite rather abundant research on the relationship between psychopathy and violence in men, there is a notable dearth of such research that focuses on women. At this stage, less is known about female psychopathy and how women's psychopathic traits and treatment needs may vary from the more heavily studied male population. However, it seems particularly noteworthy that among investigations utilizing general forensic populations, only the Richards et al. (2003) study of incarcerated women reported a reduction in violent behavior. In fact, this was the only study we identified that included women in the sample.⁸ This could suggest violence perpetrated by psychopathic women could be more amenable to treatment than that of males. It is generally the case that women are less violent than men (Archer, 2004; Bettencourt & Miller, 1996; Zeichner, Parrott, & Frey, 2003) which may be due to empathy, a known protective factor for aggressive and violent behavior that is present to greater degrees in women (Yildirim & Derksen, 2012). Laboratory research suggests that the emotion dysfunction central to psychopathy may be less dysfunctional for women relative men (e.g., Ragbeer & Burnette, 2013; Reidy, Zeichner, & Foster, 2009; Reidy, Zeichner, Hunnicutt-Ferguson, & Lilienfeld, 2008). Future research on psychopathy may benefit from examining whether protective factors for aggression are also more present in female psychopaths and whether high psychopathy women may be more responsive to treatment than their male counterparts. The

⁸Skeem et al. (2002) drew their sample from the MacArthur Violence Risk Assessment study (Monahan et al., 2001) which comprised 58% women. However, Skeem and colleagues selected a subsample of patients scoring the highest levels of psychopathy. Considering greater prevalence of psychopathy traits in men relative to women (e.g., Coid et al., 2009; Weizmann-Henelius, Viemerö, & Eronen, 2004) it is unlikely that a significant number of the participants in their analysis were female. However, no information about gender was provided for the subsample analyzed in the paper. We attempted to contact authors to determine what proportion of the sample, if any, was female but did not receive response to our correspondence in time for this publication.

reduction in violent infractions identified by Richards et al. (2003) are encouraging regarding the amenability to treatment of female psychopaths, but it is also premature to rule out other potential explanations for the results of this study. For example, there were several methodological limitations, including the use of a restricted range for psychopathy scores (i.e., exclusion of women with PCL-R scores over 30) and significant attrition among high risk women. In addition to using an exclusively female sample, this study was also unique in that the treatment applied was aimed primarily at substance abuse, unlike other treatment approaches described in this review, and higher levels of psychopathy remained associated with community recidivism upon release. Thus, there may be alternative explanations for the effectiveness of this treatment that go beyond its focus on women as a subtype of psychopathic persons. Verona and Vitale (2006) note that, “only a few researchers have taken on the pioneering work of attempting to validate measures of psychopathy, and the construct itself, in women” (p. 415). It is, therefore, unclear whether the phenomena identified in men parallel those in women. It will be important for future research to identify which treatments reduce violence with psychopathic women as well as men.

Given the presence of potentially different subtypes of psychopathic persons (e.g., female versus male, sex offenders versus general forensic populations) and the varying results of the studies included in this review, it appears evident that the field of psychopathy could benefit from developing and evaluating more tailored treatment approaches. For example, Chakhssi et al. (2010) reported iatrogenic effects in a subset of psychopathic persons while the majority was nonresponsive to treatment. The findings of Chakhssi and colleagues highlight the need to consider the unique individual dynamic factors when developing interventions for offenders, particularly considering a subset may become more violent as a result of otherwise seemingly harmless interventions. A tailored treatment approach seems to be one of the hallmarks of the Heuristic System described by Richards et al. (2003) that showed reductions in the association between psychopathy and violent behavior post-treatment. Developed as a substance abuse treatment, Richards (1999) describes this approach as a structured method of tailoring treatment to the individual through comprehensive assessment. This method allows the addiction problem to be placed in the context of each individual person's history, personality features, and stage of recovery, from which optimal treatment strategies are then selected that are most relevant to the individual (Richards, 1999). While creating individualized approaches further complicates efforts to evaluate treatment effectiveness (due to participants receiving different interventions), flexible treatment approaches may be necessary to produce optimal outcomes among this population.

The value of creating treatments that are expressly tailored to address psychopathy traits are highlighted in research by Caldwell and colleagues, who set out to create an intervention specifically customized for highly violent adolescents. In doing so, they appear to have developed an intervention that may reduce aggression by the most violent adolescents, including those that are highly psychopathic (Caldwell, 2011; Caldwell, Skeem, et al., 2006; Caldwell et al., 2007). The MJTC seemingly applies basic principles of behavioral conditioning and token economies to shift reinforcement to prosocial behaviors. Although it has not been replicated by independent research groups, these authors have consistently replicated these findings and found reductions in psychopathy traits themselves (Caldwell, 2011; Caldwell, Skeem, et al., 2006; Caldwell & Van Rybroek, 2005; Caldwell et al., 2007,

2012). The MJTC may be particularly suited for psychopathic individuals, as they are not responsive to punishment but display normal or even heightened responsivity to positive reinforcement (e.g., Buckholtz et al., 2010; Flor, Birbaumer, Hermann, Ziegler, & Patrick, 2002). This suggests that strategies which focus on positively reinforcing prosocial behaviors while extinguishing reinforcement of violent behaviors may proffer the most efficacy with highly psychopathic individuals. Notably, Hawes and Dadds (2005) reported on the differential influence of psychopathy traits on reward strategies (e.g., parental praise, parental affection) versus punitive strategies (e.g., timeout) with young boys referred for conduct problems. They found that boys high in psychopathic traits, according to parents' reports, were less responsive to punishment tactics and evinced less negative affect in response to punishment than boys low in psychopathic traits. However, psychopathy traits were unrelated to parents' ratings of reward strategies. Thus, highly psychopathic boys were less responsive to punishment strategies but not necessarily less responsive to positive reinforcement strategies. Again, this pattern of results suggests that interventions employing principles of positive reinforcement for prosocial behaviors may be most ideal for psychopathic individuals. However, these studies have only been implemented with child and adolescent populations. Thus, it is not clear if adult psychopathic persons would demonstrate a similar pattern of change. It is possible that violent behavior has already been too strongly reinforced in adult psychopaths to be counter-conditioned. Nevertheless, from a prevention standpoint and a public health perspective, it is likely most beneficial to implement interventions with psychopathic individuals at an early age before their violent behavior can become engrained. Considering the substantial economic burden psychopaths pose to society in a single year, the economic consequences they inflict across their lifetime are staggering (as are the emotional consequences). Congruently, the benefit of intervening in youth and preventing a lifetime of violence to society would be substantial. For example, every \$10,000 spent on a youth in the MJTC proffered a savings of approximately \$70,000 due to lowered recidivism, particularly violent recidivism (Caldwell, Vitacco, & Van Rybroek, 2006).⁹ Moreover, this estimate does not include the considerable savings attributable to averted health care costs and lost work wages.

Developing and evaluating more focused and tailored interventions for psychopathic individuals may be even more crucial when one considers factor structure of psychopathy, with Factor 1 representing characteristics associated with emotional detachment and Factor 2 encompassing traits associated with social deviance. This distinction further underscores the need for interventions that can address the multifaceted nature of psychopathy. Furthermore, the studies in this review all examined treatment impact on violence outcomes and recidivism data, but an examination of violence typologies is noticeably lacking from the psychopathy and violence treatment literature. Instrumental aggression, a goal-directed form of aggression motivated by secondary gain (Berkowitz, 1993; Woodworth & Porter, 2002), is commonly evinced by psychopathic individuals and much more so than by nonpsychopathic individuals (Mitchell, Avny, & Blair, 2006; Woodworth & Porter, 2002). Hostile/reactive aggression, a type of aggression driven by hostile response to various forms of perceived provocation (Berkowitz, 1993; Woodworth & Porter, 2002) is a more prevalent

⁹Estimates were calculated in U.S. dollars for the year 2001.

and normative form of violence. The general literature on psychopathy and violence has thoroughly examined the relation of psychopathy to hostile/reactive and instrumental forms of violence and suggests that psychopathy is unique in its associations to the two forms (Reidy, Shelley-Tremblay, et al., 2011). These disparate forms of aggression are associated with different risk and protective factors, which is important for the identification of targets for future treatment, prevention, and research efforts (Connor, 2002; Vitiello & Stoff, 1997). Violence that tends to be driven by extreme anger and in response to perceived provocation will have different antecedents and points for intervention than instrumental acts which may arise from aberrant empathy and socialization stemming from neurobiological development (e.g., Blair et al., 2001, 2005; Herba et al., 2007). Admittedly, this will be difficult and problematic in its assessment as pure acts of either form may be rare, but a number of research groups have developed rigorous methods of parsing these two constructs (for a review see Reidy, Shelley-Tremblay, et al., 2011). Further, data support the existence of these two relatively distinguishable forms of aggression in children (Kempes, Matthys, de Vries, & van Engeland, 2005; Raine et al., 2006; Vitiello, Behar, Hunt, Stoff, & Ricciuti, 1990), adults (Chase, O'Leary, & Heyman, 2001; Raine et al., 1998), and animals (Eichelman, 1992; Gregg & Siegel, 2001). By examining specific forms of violence outcomes, we may be able to shed light on the discrepant findings among interventions for subgroups, including psychopathic individuals.

In addition, it is our belief that knowledge of what does and does not work to reduce psychopathic violence will be greatly augmented by more transparency in the assessed interventions. There was a surprising lack of detail about interventions in the majority of the treatment outcome studies we identified. This deficit in information limits our ability to determine those components of interventions which may provide or preclude the desired therapeutic gains. Many of the studies reviewed here describe the therapies as employing cognitive-behavioral strategies which will bring to mind a number of specific activities (e.g., cognitive restructuring) to a large number of clinicians, yet even within the cognitive-behavioral domain, therapies can look considerably different. Efforts to identify the effective components of interventions will greatly advance the development of new interventions and elucidate discrepant findings within the extant literature. It is certainly important to investigate existing interventions that are effective at reducing violence of nonpsychopaths; however, considering the substantial socioeconomic burden of psychopaths' violence it is imperative that we develop interventions that are specifically designed for psychopathic violence.

In conclusion, the state of the literature precludes the ability to speculate with great confidence about the amenability of psychopathic violence to treatment. Nevertheless, we believe that there is good preliminary evidence to suggest that although they are more treatment resistant likely requiring more resources and dosage, a specifically and carefully crafted intervention may be effective in reducing violence by psychopathic individuals. However, great caution is warranted in the development and employment of such interventions because it is very possible that with at least a subset of psychopathic persons, the wrong components of an intervention may exacerbate their violent behavior. We urge clinicians and researchers to provide more transparency in publishing treatment outcome studies. By increasing transparency and improving the design and sophistication of research

evaluating existing treatment approaches, greater advancement can be made in alleviating the significant burden that psychopathic violence poses to society.

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Table 1

Summary of treatment outcome studies for psychopathy and violence.

Study	Population	Sample size ^a	Gender	Primary treatment orientation	Outcome measures	Post-treatment follow-up period (in months) ^b	Results
Abacen et al. (2011)	Sex offender	119	Male	CBT	Sexual violent recidivism	<i>M</i> = 122.7	There was no effect of treatment for PSY or non-PSY groups.
Barbaree (2005)	Sex offender	224	Male	CBT	Sexual & nonsexual violent recidivism	<i>M</i> = 62 (<i>1–120</i>)	PSY predicted sexual and nonsexual violent recidivism at significantly higher rates.
Caldwell, Skeem, et al. (2006),	Adolescent	141	Male	Behavioral	Nonsexual violent recidivism	24	High PSY adolescents treated at the MJTC were significantly less likely to violently recidivate than high PSY adolescents in TAU.
Caldwell (2011)	Adolescent	248	Male	Behavioral	Nonsexual violent recidivism	<i>M</i> = 54 (<i>24–79</i>)	High PSY adolescents treated at the MJTC were significantly less likely to violently recidivate than high PSY adolescents in TAU.
Caldwell et al. (2007)	Adolescent	86	Male	Behavioral	Nonsexual violent recidivism	<i>M</i> = 50.6 (<i>3–83.5</i>)	No relation between PSY and violent recidivism at follow-up.
Chakhssi et al. (2010)	Forensic psychiatric	74	Male	CBT	Institutional violence	No post-treatment follow-up. However violence was measured in 6 month increments for 18 months as treatment was ongoing.	Approximately 25% of PSY became more violent while most showed no change in violence.
Gretton et al. (2001)	Adolescent sex offender	264	Male	Not specified	Sexual & nonsexual violent recidivism	<i>M</i> = 55 (<i>7–106</i>)	PSY predicted sexual and

Study	Population	Sample size ^a	Gender	Primary treatment orientation	Outcome measures	Post-treatment follow-up period (in months) ^b	Results
Hildebrand et al. (2004)	Psychiatric sex offender	94	Male	CBT	Sexual & nonsexual violent recidivism	$M = 141.6 (21.6-282)$	nonsexual violent recidivism at significantly higher and faster rates. PSY predicted sexual and nonsexual violent recidivism at significantly higher and faster rates.
Langron et al. (2006)	Sex offender	571	Male	CBT	Sexual & nonsexual violent recidivism, treatment dropout	$M 70.8 (<1-140.4)$	PSY predicted treatment dropout, sexual and nonsexual violent recidivism, and faster failure rates for violent recidivism.
Looman et al. (2005)	Sex offender	154	Male	CBT	Sexual & nonsexual violent recidivism	Median was approximately 5 years, specific data not reported	PSY predicted sexual and nonsexual violent recidivism at significantly higher and faster rates.
Olver and Wong (2006, 2009)	Sex offender	156	Male	CBT	Sexual & nonsexual violent recidivism, treatment dropout	$M = 118.8 (25.2-216)$	PSY predicted treatment dropout, sexual and nonsexual violent recidivism, and faster failure rates for violent recidivism.
Olver et al. (2013)	General forensic	152	Male	CBT	Nonsexual violent recidivism, change in violence risk scores	$M = 58.8$	PSY predicted less change in violence risk scores and higher rates of violent recidivism.
Richards et al. (2003)	General forensic	404	Female	CBT	Institutional violence	$M = 14$	PSY was associated with violence prior to and during treatment, but was not

Study	Population	Sample size ^a	Gender	Primary treatment orientation	Outcome measures	Post-treatment follow-up period (in months) ^b	Results
Rice et al. (1992)	Forensic psychiatric	322	Male	Therapeutic community	Nonsexual violent recidivism	<i>M</i> = 126	associated with violence rates post-treatment. Violent recidivism for treated PSY was significantly higher than for untreated PSY.
Seto and Barbaree (1999)	Sex offender	216	Male	CBT	Sexual & nonsexual violent recidivism	<i>M</i> = 32 (<i>1.3–81</i>)	High PSY men with better treatment behavior were more likely to recidivate with sexual or nonsexual violence.
Skeem et al. (2002)	Community psychiatric	195	Not specified	Multiple ^c	Self & collateral reported violent behavior	No post-treatment follow-up. However, violence was measured in 10 week increments for 12 months as treatment was ongoing.	More persons in high PSY group receiving 7+ sessions were violent than persons in high PSY group receiving 0–6 sessions at first follow-up, but no differences at remaining 4 follow-ups.
Spain et al. (2004)	Adolescent (50% sex offenders)	85	Male	REBT	Institutional violence	No post-treatment follow-up	PSY predicted higher rates of violent incidents during treatment program.

Note. PSY = Psychotherapy; CBT = Cognitive Behavioral Therapy; REBT = Rational Emotive Behavior Therapy; MJTC = Mendota Juvenile Treatment Center; TAU = Treatment as Usual Comparison Group.

^aNumbers reflect total sample prior to attrition or exclusion from analyses for missing data.

^bThere was no uniform method of reporting for these data across studies; for ease of comparison we converted all data to time in months when sufficient information was provided. Where available we report means and ranges of follow-up periods in parentheses.

^cThere was no uniform treatment program or modality of treatment of patients in this study.